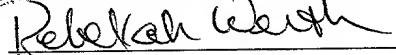


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Rebekah Werth

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

HENNINK, et al.

Examiner: Not yet assigned

Group Art Unit: Not yet assigned

Serial No.: Not yet assigned

Filing Date: Herewith

For: HYDROLYSABLE HYDROGELS FOR
CONTROLLED RELEASE

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to examination, please amend the application as follows:

In the Specification:

Please amend the specification as follows:

Please insert the separate sheet, attached hereto as Exhibit A, containing an abstract and numbered page 22, into the application following page 21.

Please insert, on page 1, on a new paragraph after the title:

--This application is a continuation of U.S. Application No. 09/214,306, filed 20 July 1999, now pending, the content of which is incorporated herein by reference in its entirety. This application claims priority under 35 U.S.C. § 119 to PCT/NL97/00374, filed 1 July 1997, which designates the U.S. and which claims priority to European Application 96/201821.4, filed 1 July 1996, and to U.S. Provisional Application 60/131,671, filed 22 November 1996.--;

on page 1, directly above line 1, insert --Technical Field--;

on page 1, line 4, insert --Background Art--;

on page 5, line 4, insert --Disclosure of the Invention--;

on page 6, line 3, insert:

--Brief Description of the Drawings

Figure 1 illustrates the influence of the spacer on the swelling ratio of dextran hydrogels.

Figure 2 illustrates the influence of the DS on the swelling ratio of dex-lactate-HEMA hydrogels.

Figure 3 illustrates the influence of the initial water content of dex-lactate HEMA hydrogels on the swelling ratio.

Figure 4 illustrates the swelling behavior of dex-SA-HEMA hydrogels.

Figure 5 illustrates the release of IgG from degrading hydrogels (dex-lactate-HEMA, DS 2.5).--; and

on page 6, line 4, insert --Detailed Description of Invention--.

In the Claims:

Please cancel claims 1-8 without prejudice or disclaimer and enter the following new claims:

9. (New) A biodegradable hydrogel comprising a network of polymer chains, wherein said network contains polymer backbones which are interconnected to one another through spacers formed by crosslinked units, wherein the spacers contain, between said polymer backbone and the crosslinked unit, one bond which is hydrolysable under physiological conditions.

10. (New) The hydrogel of claim 9, wherein said one bond which is hydrolysable under physiological conditions is a carbonate ester bond.

11. (New) The hydrogel of claim 10, wherein said carbonate ester bond is derived from carbonyl di-imidazole.

12. (New) The hydrogel of claim 9, wherein said polymer backbones are derived from a water-soluble polymer.

13. (New) The hydrogel of claim 10, wherein said polymer backbones are derived from a water-soluble polymer.

14. (New) The hydrogel of claim 11, wherein said polymer backbones are derived from a water-soluble polymer.

15. (New) The hydrogel of claim 12, wherein said water-soluble polymer is dextran or a derivatised dextran.

16. (New) The hydrogel of claim 13, wherein said water-soluble polymer is dextran or a derivatised dextran.

17. (New) The hydrogel of claim 14, wherein said water-soluble polymer is dextran or a derivatised dextran.

18. (New) The hydrogel of claim 9, wherein the crosslinked units are based on units selected from the group consisting of acrylate, methacrylate, and hydroxymethacrylate units.

19. (New) The hydrogel of claim 9, further comprising a drug.

20. (New) The hydrogel of claim 19, wherein the drug is a proteinaceous material.

21. (New) A crosslinkable polymer capable of forming a hydrogel, comprising a hydrophilic polymeric backbone and at least one spacer, the spacer comprising one bond which is hydrolysable under physiological conditions and at least one crosslinkable group.

22. (New) The crosslinkable polymer of claim 21, wherein said one hydrolysable bond is a carbonate ester bond.

23. (New) The crosslinkable polymer of claim 22, wherein said carbonate ester bond is derived from carbonyl-di-imidazole.

24. (New) The crosslinkable polymer of claim 20, wherein said polymeric backbone is derived from dextran or derivatised dextran.

25. (New) The crosslinkable polymer of claim 20, wherein the crosslinkable group is selected from the group consisting of methacrylate, acrylate, and hydroxyethyl methacrylate.

26. (New) A crosslinked polymer capable of forming a hydrogel, obtained by crosslinking the crosslinkable polymer of claim 21.

27. (New) A crosslinked polymer capable of forming a hydrogel, obtained by crosslinking the crosslinkable polymer of claim 22.

28. (New) A crosslinked polymer capable of forming a hydrogel, obtained by crosslinking the crosslinkable polymer of claim 23.

29. (New) A crosslinked polymer capable of forming a hydrogel, obtained by crosslinking the crosslinkable polymer of claim 24.

30. (New) A crosslinked polymer capable of forming a hydrogel, obtained by crosslinking the crosslinkable polymer of claim 25.

31. (New) A method for preparing a hydrogel, which method comprises crosslinking the crosslinkable polymers as defined in claim 26 in an aqueous medium.

32. (New) A method for preparing a hydrogel, which method comprises crosslinking at least two crosslinkable polymers as defined in claim 27.

33. (New) A method for preparing a hydrogel, which method comprises crosslinking at least two crosslinkable polymers as defined in claim 28.

34. (New) A method for preparing a hydrogel, which method comprises crosslinking at least two crosslinkable polymers as defined in claim 29.

35. (New) A method for preparing a hydrogel, which method comprises crosslinking at least two crosslinkable polymers as defined in claim 30.

36. (New) The method of claim 31, wherein a drug is present during the crosslinking step.

37. (New) The method of claim 36, wherein the drug is a proteinaceous material.

REMARKS

Before examination on the merits, Applicants respectfully request entry of this Preliminary Amendment. This application is a continuation application filed under 37 CFR 1.53(b) to claim cancelled subject-matter set forth in a co-pending US Application No. 09/214,306, filed 20 July 1999.

An abstract on a separate sheet is attached for insertion into the application. The abstract is identical to that published with PCT/NL97/00374 from which the instant application claims priority. Said claim for priority is specified in the amendment to the specification. The requested amendments to the specification include the addition priority information, subheadings for sections of the specification, and brief descriptions of the drawings. No new matter is presented.

The present claims are supported by the claims originally filed as well as by the entire application. No new matter has been added and entry of this amendment is respectfully requested.

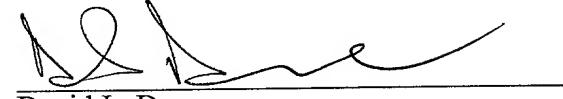
CONCLUSION

Applicants respectfully submit that claims directed to the present invention are enabled and limited to subject-matter disclosed in the above mentioned parent application. No new matter has been added to the parent specification.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 31363200501. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

By:



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Dated: December 6, 2001

EXHIBIT A.

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ABSTRACT

The present invention relates to a biodegradable hydrogel comprising bonds which are hydrolysable under physiological conditions. More particularly, the hydrogel consists of two interpenetrating polymer networks interconnected to one another through hydrolysable spacers. In addition, the invention relates to a method for the preparation of a hydrogel, wherein macromolecules, e.g., polymers which contain bonds which are hydrolysable under physiological conditions, are cross-linked in an aqueous solution.